

PROJECT IMPLEMENTATION UNDER DONOR AND GOB
FUND: An Analysis of “Construction of Server Stations for
Electoral Database (CSSED)” Project

Dissertation submitted in partial fulfillment of the
requirements for the Degree of
Masters in Procurement and Supply Management

Submitted by:
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(CSSED)” Project

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List of Acronyms

BEC	Bangladesh Election Commission
CPTU	Central Procurement Technical Unit
CSSED	Construction of Server Stations for Electoral Database
DP	Development Partners
DPEC	Departmental Project Evaluation Committee
DSPEC	Departmental Special Project Evaluation Committee
DoA	Department of Architecture
ECNEC	Executive Committee on National Economic Council
ECS	Election Commission Secretariat
KPI	Key Performance Indicators
LGED	Local Government Engineering Department
MoLGRD	Ministry of Local Government and Rural Development
MoHPW	Ministry of Housing and Public Works
MoPA	Ministry of Public Administration
OGC	Office of the Government Commerce
PC	Planning Commission
PDPP	Preliminary Development Project Proposal
PEC	Project Evaluation Committee
PIC	Project Implementation Committee
PMC	Project Monitoring Committee
PPA	Public Procurement Acts
PPR	Public Procurement Rules
PRINCE2	PRoject IN Controlled Environment
PSC	Project Steering Committee
PWD	Public Works Department

ABSTRACT

A huge amount of government expenditure is channeled through the annual development program (ADP) which normally undertakes numerous construction and other types of procurement activities through the implementation of development programs and projects. Government projects are undertaken through the involvement of a number of ministries, divisions and different implementing agencies with a long and vigorous approval process. During project preparation and implementation, procurement has a huge implication. The procurement system adopted by the government has also played a significant role on the efficiency and effectiveness of the project implementation. The reforms initiatives undertaken by the government in order to bring efficiency, economy and effectiveness in the public procurement system started in the year 2003 through the introduction of Public Procurement Regulations (PPR'2003). To reinforce the improvement measures in the public procurement system, the House of the Nation enacted the much desired law, the Public Procurement Act '2006. Under the Act of 2006, the Public Procurement Rules 2008 was framed and issued which is now widely observed in all government purchase. The main issue of this study is to compare the efficiency and effectiveness of the project implementation for the government projects that follow PPR with projects that are funded by international development partners that follow specific guidelines of the donor partners. To that end this study concentrates on a single project namely, "Construction of Server Stations for Electoral Database (CSSED)" project implemented by Bangladesh Election Commission (EC). The construction of the project is implemented by Local Government Engineering Department (LGED) and Public Works Department (PWD). To conduct the study, mainly analysis of the implementation of PWD part of the project has been done.

Project efficiency can be measured by assessing the performance of the project on some key measurable parameters. These parameters are – the cost of the project, the time of project implementation and construction quality. Since there is no way of measuring efficiency and effectiveness of the project directly, these three project parameters have been measured by conducting survey among the implementers of the project and interviewing the key informants. Those parameters then have been used to evaluate the efficiency and effectiveness of the project implementation and compared with other GoB projects. Also to have an in depth knowledge of the project characteristics interview with the 'key informants' of the project was also conducted who provided valuable information about the project concerned and also the characteristic features of other government projects.

To assess the efficiency and effectiveness of the project survey questionnaire has been developed focusing on the key performance indicators of the project namely, the cost, time and quality of the project construction. The Likert Scale model has been used and a rating scale of 1 to 5 has been chosen which could easily be used in the quantitative statistical analysis like calculation of mean, median, mode and subsequent hypothesis testing viz. the student t-test.

The study reveals that the efficiency of the project in terms of quality and cost is more than other GoB projects. But in terms of implementation time the project does not perform any better than other GoB projects. The inconsistency in following some of the provisions of PPR has added complexity in contract approval and management of the project which resulted in delayed project implementation. As a result, in spite of its better quality and cost achievement, the delay in implementation had adversely affected the effectiveness of the project.

The lessons learnt from this project shall be applied in further projects. For example, the formulation of DPP for any future projects involving civil construction shall be done in consultation with Public Works Department (PWD) since they have the expertise of project implementation and knowledge of procurement of works. The provision of rule 12 of the PPR'2008 stipulates that procurement process and contract administration procedures of those departments/agencies which do not have sufficient expertise can be delegated to the agencies that have expertise in these fields. To that end construction projects of BEC or other organizations that do not have expertise in construction matters can be delegated to PWD. This provision will not conflict in case of donor funded projects also.

CHAPTER 1

1.0 INTRODUCTION

1.1 Background and context:

In pursuance of achieving economy, efficiency, transparency and accountability in public procurement, the Government of Bangladesh, has undertaken significant reforms initiatives aiming at improving performance of public procurement. In order to achieve its objective, a permanent unit, named as Central Procurement Technical Unit (CPTU) was established in 2002 as implementing unit in the field of procurement reform and reform implementation monitoring. Reform process was carried out with ultimate outcomes of formulation and issuance of a unified procurement processing system (Public Procurement Regulations 2003), Implementation Procedures for PPR 2003, Public Procurement Processing and Approval Procedures (PPPA), Revised Delegation of Financial Powers (DOFP) and several Standard Tender Documents (STD's)/Standard Request for Proposal Document for the procurement of Goods, Works and Services. Later on in 2006, the Public Procurement Act was enacted by the Parliament (PPA 2006) and in 2008, a new set of Public Procurement Rules (PPR 2008) was issued.

In continuation of its first phase of procurement reforms initiatives, a new technical assistance project titled “Public Procurement Reform Project II (PPRP-II)” was approved by the government in June, 2007 which is now being implemented by the CPTU/IMED.

All these reform initiatives were undertaken by the impetus given by the World Bank and other international development agencies in order to bring a more harmonized system of government procurement all over the world. As a result of these reforms process somewhat uniform procurement procedures have been introduced in government procurement in all the different government, semi-government and autonomous bodies of the government of Bangladesh. But some procedures still remain different. This study intends to find out those areas where the gap exists and to compare the impacts of the different provisions on the efficiency and effectiveness of project implementation.

1.2 Statement of the Problem:

The project under study namely, “Construction of Server Stations for Electoral Database (CSSED)” is owned by Bangladesh Election Commission (BEC) and it involves several ministries and government agencies namely Ministry of Public Administration (MoPA), Ministry of Land (MoL), Public Works Department (PWD), Local Government and Engineering Department (LGED), Department of Architecture (DoA) etc. From the Donor part Department for International Development (DFID) and the Government of Netherlands are funding this project and entrusted their administration to UNDP. The actual construction of the project is being implemented by PWD and LGED.

Development projects under foreign aided funds are often implemented by following donor administration and guidance. Donor organizations stipulate several stage gates regarding ‘go ahead’ with respect to different phases of the project. The procurement and contract management processes are also exercised following donor guidelines. Development partners like UNDP, the World Bank, Asian Development Bank (ADB) and others have their own procurement guidelines and procedures. These organizations also have their own Standard Bidding Documents (SBDs). For example, procurement in the UNDP uses a model SBDs prepared by the joint effort of the Multilateral Development Banks (MDBs) and International Financial Institutions (IFIs) for International Competitive Bidding (ICB) and the UNDP vetted SBDs for National Competitive Bidding (NCB).

On the other hand purely government funded development projects are implemented through the rules and procedures set forth by the government. The Public Procurement Act (PPA 2006) and Public Procurement Regulation (PPR 2008) were made effective from 31 January, 2008. PPR 2008 is strictly followed by various public sector organizations in public procurement of Bangladesh. Standard Tender Documents (STDs) based on PPA 2006 and PPR 2008 are prepared by CPTU and following those STDs, different executing agencies of the government prepare their Tender Documents.

This study is intended to assess the efficiency and effectiveness of the project implementation and to compare it with other GoB funded projects under PWD. To measure these, procurement process of the project including the approval procedures at different stages of the procurement cycle, different contractual terms, and contract management procedures will be investigated. Finally, means of improving the drawbacks will be found.

Project efficiency can be measured by assessing the performance of the project on some key measurable parameters. These parameters are – the cost of the project, the time of project implementation and construction quality. Since there is no way of measuring efficiency and effectiveness of the project directly, these three project parameters have been measured by conducting survey among the implementers of the project and interviewing the key informants. Those parameters then have been used to evaluate the efficiency and effectiveness of the project implementation of the project under study and then compared with other GoB projects.

1.3 Objectives:

Projects funded fully or partly by development partners are often guided by internationally accepted procurement principles like those formulated by World Bank or other International Financial Institutions (IFIs). Though PPR of Bangladesh has been formulated following those international guidelines mainly that of World Bank, it is normally the case that any project where DPA fund is involved may have to be followed by development partner's guidelines and there might have some procedural level differences. This study intends to find if there is any significant difference in terms of project implementation procedure or procurement procedure that impact on the efficiency and effectiveness of project implementation.

The objectives of the study are:

- To identify the procurement and contract management procedures of the CSSED project
- To compare the efficiency and effectiveness of this project with that of other GoB projects.

1.4 Research Questions:

The study is intended to conduct an in-depth analysis of the different procurement and contract management procedures that are being exercised by the CSSED project and compare them with those undertaken by purely GOB funded projects. In doing so, the study will assess the efficiency and effectiveness of the project and will determine if it is more efficient and effective than other GoB project.

The research questions are as follows:

- What are the procurement and contract management procedures of this CSSED project?

- Is this project more efficient and effective than other GoB project?

1.5 Scope:

There are a number of Donor funded projects in Bangladesh. This is an analysis of a particular project funded by DFID and the government of Netherlands and is administered by UNDP. This study is intended to find out the project implementation procedure exercised by UNDP including the procurement practices they follow. Subsequently an analysis of the efficiency and effectiveness of the project will be conducted. Also a comparison will be made between this CSSED project and the other projects that are implemented under GoB administration in terms of efficiency and effectiveness of project implementation. While doing this the procurement and contract administration procedures followed under this project and in other GoB projects will also be explored.

1.6 Variables of the study:

The main objective of the study is to determine the efficiency and effectiveness of the project implementation and in determining so the procurement and contract management procedures will have to be determined and subsequently a comparison of this project with that of other GOB projects has to be performed. The efficiency and effectiveness of the project shall be determined by selecting some key performance indicators (KPIs). Having conducted the literature review the variables found are cost, quality and time required to implement the project. So, the major variables of the study are:

The project implementation time

The quality of the project

The cost of implementing the project

1.7 Methodology:

A combination of Questionnaire Survey, Interview and literature review of the procurement guidelines has been used for this study. Mostly qualitative analysis has been used to get an in-depth understanding of the project implementation procedure. At the same time some indicators of project performance have been considered in order to assess the efficiency and effectiveness of the project implementation. These indicators are mostly related to the time, cost and quality issues of the project. The survey questionnaire has been prepared following the Likert Scale (rating scale) whereby qualitative issues are converted

into quantitative scale in order to analyse the variables with the help of some statistical analytical tools.

1.7.1 Methods of Collecting Data:

Data and information have been collected by reviewing all relevant papers on the said project as well as policy and procedures pertinent to procurement. These include:

- Review UNDP procurement guidelines and manual
- Review of PPA, PPR and SBDs
- Review and analyse available documents of the project

The primary data was collected by the following means:

- Interview with key informants e.g .National Project Director, UNDP representative, Consultants employed, and focal persons from PWD and LGED.
- Questionnaire survey was conducted to get opinion from PWD field executive engineers who are actually implementing the construction works.

As for secondary data, available project documents have been studied and analysed to validate what have been found from primary data.

1.7.2 Analysis of Data and Tools used:

For qualitative data or information judgmental inference will be made. The questionnaire is prepared for evaluation of the project by the field level officials who are actually implementing the project. Mainly judgmental answers are sought which have been put on rating scale for quantification and subsequent analysis. As an analysis tools of the data, MS excel has been used.

1.8 Limitations:

There are a lot of guidelines, rules, and regulation on the procurement both for UNDP and GoB procurement. But few academic researches have been done on this. This is a limitation of the study. Also due to the enormous volume of the project in terms of its duration and cost full document based analysis was not possible given the time allowed for the study. That is why analysis of the project efficiency and effectiveness has been made on the basis of the perceptions of the project officials who are actually implementing the project.

1.9 Hypothesis of the study:

To assess the efficiency and effectiveness of the project survey questionnaire has been developed focusing on the key performance indicators of the project namely, the cost, time and quality of the construction project. A rating scale was developed for quantifying the assessment and statistical analysis performed. On the basis of that analysis the following hypothesis *has* been developed:

Null hypothesis $\mu:H_0$ The project is more efficient and effective than other GoB projects

Alternate hypothesis $\mu:H_1$ The project is not more efficient and effective than other GoB projects

But the above hypothesis is tested indirectly since there is no direct way of measuring the efficiency and effectiveness. The variables used to measure the efficiency and effectiveness of the project are the project parameters mainly in the form of project implementation time, cost and quality of construction and other project performances. These parameters have been measured with the survey performed on the main implementers of the project in the field and in the project office. Having conducted the survey the data were analyzed with statistical tools. Three hypotheses are then formulated to test the efficiency parameters namely, the time, quality and cost. These are:

Hypothesis - 1

Null hypothesis $H_0: \mu = 4.00$; the true population score is 4.00 indicating that the project completion time will be delayed due to the special provisions of this project

Alternate hypothesis $H_1: \mu < 4.00$; the mean score is less than 4.0; indicating that there will be no delay.

Hypothesis – 2

Null hypothesis $H_0: \mu = 4.00$; the true population score is 4.00, indicating that the project quality will be enhanced due to the special provisions of this project

Alternate hypothesis $H_1: \mu < 4.00$; the mean score is less than 4.0, indicating that there will be no enhancement of quality.

Hypothesis - 3

Null hypothesis $H_0: \mu = 4.00$; the true population score is 4.00 indicating that the project cost will be increased due to the special provisions of this project

Alternate hypothesis $H_1: \mu < 4.00$; the mean score is less than 4.0; indicating that there will be no increase in cost.

The mean, standard deviation, and t-test were used to verify results and to arrive at certain conclusions. A population mean of 4.00 was used as the cut-off point for decision making on each item of the instrument. The t-test was used since the sample size was only 25 (<30). A 5% significance level ($\alpha=0.05$) was used.

The study is conducted mainly on the basis of analyzing the responses of the officials who are actually implementing the projects and the responses from some key informants (project director, project coordinator from the part of the implementing agencies etc.). Based on the responses a hypothesis has been established and statistical tools have been used to test the hypothesis.

1.10 Chapter Outlines:

In the following chapter “Literature Review” (CHAPTER 2) some literatures on project management concepts, project organization, approval procedures of GoB projects and efficiency and effectiveness measures of project have been reviewed. Reviews of the DPP and Project Document (ProDoc) for the CSSED project have also been done in that chapter. Finally contract approval procedure and contract administration of the project have also been explored in it.

In the next chapter “Data Analysis and Findings” (CHAPTER 3), the efficiency and effectiveness of the project implementation are assessed by analyzing the different project parameters that have been set forth in the survey questionnaire. These parameters (time, cost, quality) have been evaluated from the responses of the project officials and the field level officers of PWD who are actually implementing the project. The hypothesis that have already been developed also have been tested in that chapter.

Based on the findings of CHAPTER 3, some conclusions and recommendations have been provided in CHAPTER 4.

CHAPTER 2

2.0 LITERATURE REVIEW

In literature review a range of project management procedures are available on the internet. This will be discussed in order to have an idea about the project management organization and its implementing procedure. Then the project management structure of the project under study shall be compared with those structures.

An investigation on the procurement guidelines for UNDP funded projects will be done and that should be compared with the GoB rules namely the PPA and PPR. In addition, the Project Document (ProDoc) prepared by the UNDP shall be compared with the Development Project Proposal (DPP) for the project specific issues.

In the sections that follow, first some key concepts of project performance shall be discussed followed by an analysis of project management concepts and then guidelines and rules for both UNDP and GoB procurement will be reviewed.

2.1 Project Efficiency and Effectiveness:

Project implementation must be evaluated on some measurable performance parameters which determine how much efficiency, economy and effectiveness have been achieved. Efficiency can be defined as the amount of inputs (resources) required in achieving a certain amount of output. The works project under study can be measured by finding out the time and cost invested as well as the acceptable quality standards that must be ensured.

Effectiveness is at what level the output is achieved involving the available resources. Often the effectiveness of project is evaluated on the basis of achievement of its desired outcome. For the project under study the effectiveness of the project will depend on how quickly the construction of the building is completed and handed over to the local election authority so that sufficient accommodation facilities are available for the election staffs, and all the computer servers, accessories and other office equipments are properly arranged in the building. Often the efficiency and effectiveness terms are confused. The two are very much interlinked, the former concerns the efficient and economic use of resources while the latter concerns with the utility/ usability of the result acquired. Often it is

differentiated with the statement, “Efficiency is doing things right and effectiveness is doing right thing” (Wikipedia 2013:para. 3)

Efficiency is broadly understood as the maximization of output for a given level of input or resources, while *effectiveness* is directed to the achievement of goals or objectives. Projects are formed to accomplish objectives and success is measured in terms of how well these objectives have been met. Criteria such as meeting project time, budget, technical specification and mission to be performed are the top priorities of project objectives. But these objectives are only the immediate outcome of the project implementation and can only be attributed to the efficiency gain of the project implementation. A broader outcome of the project in terms of the degree of achievement of the superordinate goals, the customer satisfaction achieved etc shall be assessed. Asian Social Science (Jul 2008) in its publication of ‘Analysis of *Effectiveness Measures* of Construction Project Success in Malaysia’ states that *Efficiency* is the maximization of output for a given level of input or resources, while *Effectiveness* is directed to the achievement of goals or objectives. Pinto and Slevin (1988: 1989) identify project success in terms of efficiency and effectiveness measures. According to them efficiency measures refer to strong management and internal organizational structures (adherence to schedule and budget, and basic performance expectations). In other words, efficiency measures deal with ‘time, budget and specifications’ Pinto and Slevin (1988: 1989) also attribute effectiveness to the achievement of project objectives, user satisfaction and the use of the project. A project delivered on time, within budget, and meets performance specifications may not be well-received by the client/users for whom it is intended.

Efficiency measurement can be done by measuring the resources used for implementing the project. Effectiveness can be measured by investigating whether the buildings constructed can be properly utilized. This measurement can be done by conducting a survey among the beneficiaries on the overall project acceptance.

The indicators of efficiency- the time, cost and quality- are often difficult to achieve at the same time. Often one of these parameters comes at the cost of one or both of the others. So, there is a ‘trade-off’ among these three performance objectives which are known as “project objectives triangles” (Slack, Chambers and Johnston 2010:466). The project under study will be assessed on these three measurable performance objectives.

2.2 Review of the project organization:

Advanced Procurement for Universities and Colleges (APUC), Scotland (Draft Guideline 2012) states that construction projects like the project under study should be

organized in a formal organizational framework with defined responsibilities. The client and the suppliers and other stakeholders should be organized properly. The Client has multiple responsibilities, and it is normal to divide these amongst several individuals so that the appropriate management structure can be implemented and conflicts of interest avoided.

A typical Client-side structure is as follows:

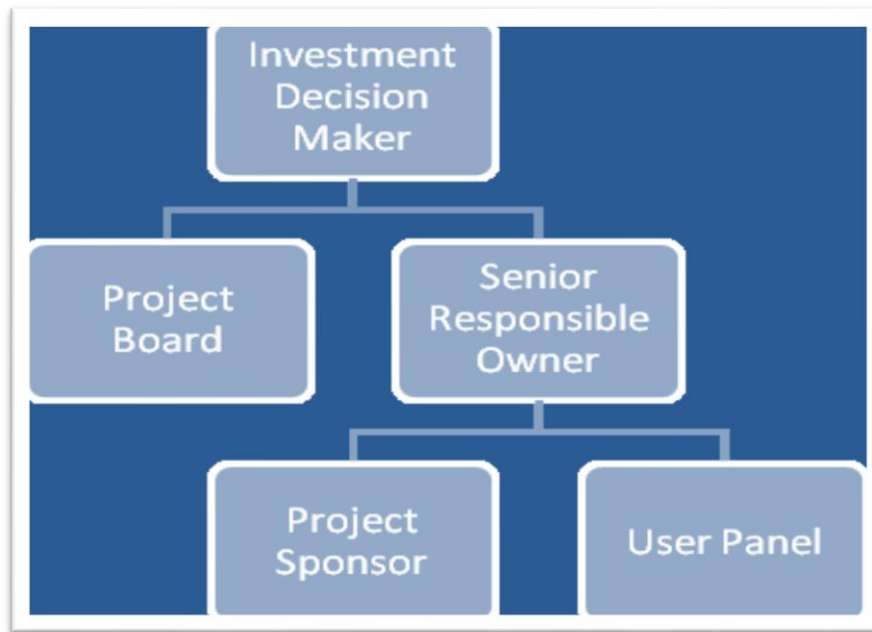


Figure 2.2. Advanced Procurement for Universities and Colleges, UK

The Office of The Government Commerce (OGC) in the UK, which was the UK government's sole agency for all kinds of government purchasing before being absorbed by the Cabinet Office, describes the essential roles and responsibilities that a client organization can play in a project organization:

- **investment decision-making** – takes the investment decision for use of resources (including capital, operational and manpower resources) based on justification of the business need, affordability and cost-effectiveness, and whole-life value for money (the **investment decision maker** or IDM)
- **ownership** – defines the scope of the project for delivering the business benefits; personally accountable for the success of the project (the **senior responsible owner** or SRO (often referred to as

the project owner). This role should be undertaken by a senior individual in the organization, who should have the status and authority to provide the necessary leadership and must have clear accountability for delivering the project outcome. This individual should also ensure that sufficient resources are made available to enable a successful outcome

- **interface between ownership and delivery** – ongoing day-to-day management and decisions on behalf of the SRO to ensure that the desired project objectives are delivered; this individual must have adequate knowledge and information about the business and the project to be able to make informed decisions (the **project sponsor**)
- **provision of independent advice to the client** – independent advice may be required on a range of issues, including business strategy, investment appraisal, financial, legal, and technical aspects). This is the role of **independent client advisers**, who may be appointed to assist the project sponsor; sometimes they may be appointed early on in a project to support the SRO. They should be independent from suppliers to avoid any conflict of interest. (OGC 2003:pp. 3-5).

For smaller or less complex projects some roles may be combined, but only if the person combining the roles has the required competencies, experience, expertise and time to commit to the task. The roles of investment decision maker/SRO, SRO/project sponsor or project sponsor/project manager can be combined for smaller or straightforward projects, where a single individual can fulfill the responsibilities of both roles. Where roles are combined, the allocation of the functions must always be absolutely clear. Where two roles are combined, the person appointed must have at least the authority and status of the 'higher' role. However, it is important to note that the three roles of investment decision maker, senior responsible owner and project sponsor cannot be allocated to a single individual because of the risk of conflict of interest. In addition, note that roles that do not overlap should not be combined – for example, the roles of SRO and project manager should not be combined, with a different individual taking the role of project sponsor.

In the CSSED project, investment decision maker role is played by the Chief Election Commissioner and other Election Commissioners.

Senior Responsible Officer (SRO) role is played by the Secretary of the Election Commission Secretariat. As a senior-most officer of the republic he has sufficient authority and control over the policy issues of the project. He is also the chairman of the Project Steering Committee (PSC).

The Project Sponsor/Project Manager role is played by the National Project Director.

One of the widely used Project guidelines/methodology of Project Management is that of PRINCE2 (**PR**oject **IN** Controlled **E**nvironment) which is well documented in the OGC (Office of Government Commerce) website. The PRINCE2 principle defines roles and responsibilities, and states that a PRINCE2 project will always have three primary categories of stakeholders, and the interests of all three must be satisfied if the project is to be successful. These three make up the project board. These are:

Business: The products of the project should meet a business need which will justify the investment in the project. The project should also provide value for money.

Users: These are the individuals or groups who will use the output of the project in order to realize the benefit after the project is completed and will operate, maintain and support the project's output.

Suppliers: These are the group of individuals who provides specialist input for the creation of output of the project. They may come from within the organization or may be from outside. The Senior Supplier(s) will represent this stakeholder interest on the Project Board.

The project management procedures practiced in GoB has many aspects similar to the PRINCE2 methodology. The PRINCE2 approach of project management separates project management and direction from the actual delivery of the project. This enables the project board to take a 'management by exception' approach. The project management structure has four levels, three of which represent the project management team and the fourth which sits outside of the project. Figure 2.0 illustrates these four levels of management.(OGC 2009:pp. 32-33).

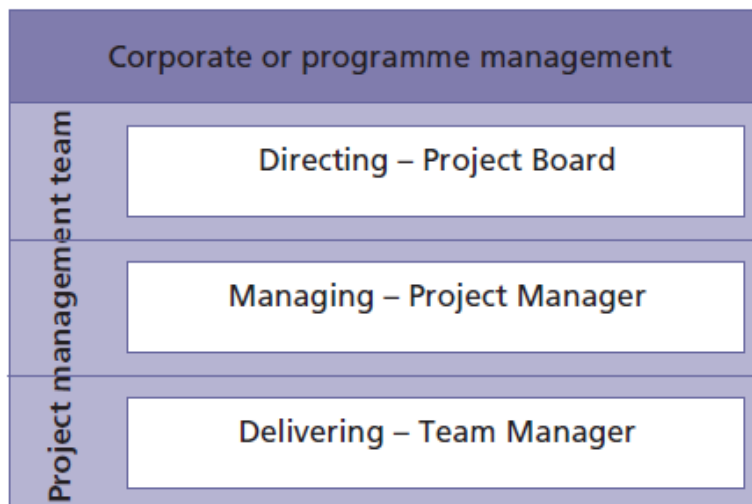


Figure 3.2 The four levels of management within the project management structure.
[PRICNCE2, OGC]

The four levels of management are:

Corporate or programme management: This level sits outside the project management team but will be responsible for commissioning the project, including identifying the Executive and defining the project-level tolerances within which the Project Board will work. This information should, if possible, be documented in the project mandate. In our concerned, the chief election commissioners and other election commissioners are positioned at this level of management.

Directing: The Project Board is responsible for the overall direction and management of the project within the constraints set out by corporate or programme management. The Project Board is accountable for the success of the project. As part of directing the project, the Project Board will:

- Approve all major plans and resources
- Authorize any deviation that exceeds or is forecast to exceed stage tolerances
- Approve the completion of each stage and authorize the start of the next stage (managing the stage boundaries)
- Communicate with other stakeholders

The project board is composed of three distinct groups: **executive, senior user(s), and senior supplier(s)**. The **executive** is responsible for the 'business case' for the

duration of the project and ensures that the project is aligned with corporate strategies. The Secretary, Election Commission is the executive for our project. The **senior user(s)** is responsible for specifying the benefits upon which the Business Case is specified. This group also ensures that the project produces products which deliver the desired outcomes and expected benefits (derived from the project's outcomes) are realized. The senior officials of the Election Commission who will be representing the user of the project output are the senior users for this project. **The senior supplier(s)** represents the interests of those providing specialist input to the project including designing, developing, facilitating, procuring and implementing the project's products. This role is accountable for the quality of products delivered by the supplier(s) and is responsible for the technical integrity of the project. The Project Document (PRODOC) for this project prepared by UNDP specifies Country Director of UNDP as the senior supplier. Also chief engineers of LGED and PWD may also be considered senior suppliers in this case since they are providing specialist technical inputs to this project. The project board as mentioned in the PRINCE2 has been termed as Project Steering Committee (PSC) in the DPP and PRODOC of this project where the Secretary, BEC has been placed in the chair while the National Project Director is the member secretary. As per the pro-Doc of the UNDP mentions, the main responsibilities of the Project Board are to:

1. Provide overall direction for the project
2. Monitor and control progress
3. Review each completed stages
4. Commitment of project resources, as required
5. Deliver project results and objectives
6. Provide inter-ministerial coordination
7. Approve any revision of the work plan

The next level of management below the project board is the Project Manager (PM). The day-to-day management of the project is the responsibility of the PM. The major responsibility of the PM is to ensure the required delivery of the project within the constraint of the time, cost, quality, scope, and risk. In the project concerned, the National Project Director (NPD) has been given these responsibilities. As per the Terms of Reference (TOR) set forth in the DPP and PRODOC, the key responsibilities of NPD are the overall management and guidance of the project, reporting and providing feedback to the project board about the project progress, managing the relationship with key stakeholders etc.

Below the level of PM sits the Team Managers who are responsible for managing their respective team. This is the case for large projects like the project under study. In this project the Deputy Project Directors (DPD) may be considered as the Team Managers. The two DPDs are responsible for managing the projects being implemented by the two implementing agencies namely PWD and LGED (UNDP 2010:8).

Considering the above formal structure and comparing with other GoB projects it is found that there are a lot of similarities in the formation of the structure for implementing government projects. In all GoB projects it is normally established the whole project organization structure from the very beginning of formulation of DPP. The project organization structure along with the Project Steering Committee (PSC), Project Implementation Committee (PIC) and Project Monitoring Committee (PMC) are all defined in the DPP. So this could be analogous to the OGC guidelines for project organization structures, roles and responsibilities.

2.3 Review of UNDP guidelines:

The UN procurement manual (updated Nov 2011) provides guidance on procurement policies, procedures and practices to all staff members involved in the procurement and acquisition processes and activities in all offices in the Head Quarters and offices away from the Head Quarters. The Manual provides the legal framework to undertake procurement activities in full compliance with current policies and industry practice. The manual follows UN General Principles specified in the UN Financial Regulations and Procedures (FRR). The relevant regulations of the UN FRR are mentioned below:

Regulation 5.12:

Procurement functions include all actions necessary for the acquisition, by purchase or lease, of property, including products and real property, and of services, including works. The following general principles shall be given due consideration when exercising the procurement functions of the United Nations (UN 2003:p. 23)

Regulation 5.13:

Tenders for equipment, supplies and other requirements shall be invited by advertisement, except where the Secretary-General deems that, in the interests of the Organization, a departure from this regulation is desirable (UN 2003:p. 24)

The projects under UNDP assistance is implemented following the agreements made between the government of Bangladesh and the UNDP called the Standard Basic Framework Agreement which was entered into between the UNDP and Bangladesh government in 1986. (SBFA,1986). All project assistance provided by UNDP is provided following the provisions in that agreement. As such, Government of Bangladesh has to comply with those provisions in project implementation despite having its own project implementation procedures. The provisions of PPA and PPR also may have to be superseded in this case UNDP (updated 2006).

2.4 Review of the approval procedures:

In this section two relevant approval procedures shall be explored. One is the approval procedure of the project itself and the other is the approval procedure for the contract for different procurement of goods, works and services.

2.4.1 Project approval procedure:

The approval of any government project undergoes several tiers of the government organizations and the streamlining of these several tiers involving several ministries/agencies of the government is very important for successful project implementation. Any investment or technical assistance project shall follow the defined procedure known as standard operating process SOP for project approval. Initially the implementing agency prepares Development Project Proposal (DPP) for the project and sends it to the line ministry for further processing and approval. In the line ministry the planning wing/branch conducts a preliminary examination on the proposal for its acceptability and prepares a report for the Examining Committee in the ministry. On the basis of a positive decision of examining committee, the Planning wing/branch prepares a working paper for the Departmental Project Evaluation Committee (DPEC) or the Departmental Special Project Evaluation Committee (DSPEC) both of which are chaired by the Secretary. The DPEC/DSPEC will either accept the proposal and forward it to the Planning Commission after taking approval from the Minister or send it back to the agency/department with recommendation for amendment or reconstruction (GOB Policy Document 2008: p-3)

Once the DPP is finalized by the DPEC with recommendation from the HR committee of the Finance Division, the Planning Wing is required to arrange for the submission of the DPP to the Planning Commission (respective Wing/Sector-division) within 10 days.

In the Planning Commission the concerned wing appraises the project and prepares detailed working paper for Project Evaluation Committee (PEC) meeting. If the Wing/Sector-Division is not satisfied with the proposal, it can refer the DPP to the initiating Ministry/Division within 30 days. The DPP can't be referred to Ministry for amendments of any sort after the 30 day lapses. In that case, the respective Wing/Sector-Division shall make amendments and arrange for PEC submission. In this case The DPP must be resubmitted by the Ministry within 25 days incorporating the recommendations of the Wing/Sector-Division [Policy Document 2008: p-5].

Having prepared detailed working paper, the respective wing/sector-division shall place it for the PEC meeting chaired by the Member of the concerned division of the Planning Commission.

PEC decision on the project appraisal must be noted in the Working Paper as "Planning Commission comments and recommendation.

In case the project accepted by the PEC, respective Wing/sector-Division shall prepare the Summary for project approval within 10 days after the issue of PEC meeting minutes and request the approval of the Planning Minister/Advisor/State Minister for projects costing Tk. 25 crore (250 M). In case of projects with cost exceeding Tk. 25 crore (250 M) 35 copies of DPP and working paper shall be prepared and submitted for the consideration of ECNEC. The DPP shall be placed at the ECNEC with clear comments and recommendation from the Planning Commission (PC). A total of 40 pages is the maximum limit of any final DPP.

When foreign aid assistance is necessary, the Line Ministry (LM) is responsible for developing and submitting a Preliminary Development Project Proforma/Proposal (PDPP) to the respective Wing/Sector-Division of Planning Commission (PC) with another copy forwarded to the ERD for **approval on principle**. The Wing/Sector-Division shall finalize its opinion within 20 days with the approval of the Minister/Advisor/State Minister of Planning and PC shall issue instructions directed to initiating the ministry/division for further required action.

Economic Relations Division (ERD) would then negotiate foreign assistance with Development Partner(s) (DPs) specifically for approved PDPPs. Then the Line Ministry/Division prepares DPP/TPP on the basis of ERD's nods, reflecting the availability of funding assurance from DP(s). ERD shall keep abreast LM, IP, and the respective Wing/Sector-Division of the PC regarding different stages of negotiation with DPs. The LM/Division/IP shall finalize the DPP on the basis of all relevant information. The FD, PC, IMED, ERD and other relevant ministries/divisions/ agencies might be involved in the

preparation of DPP through the formation of committee. All relevant elements of the DPP/TPP evaluation shall be incorporated in the document. (Policy Document 2008: p-9).

Projects can be revised twice. In special cases PC can undertake project revision processes for the third time taking approval of the Minister/Advisor/State Minister for Planning.

For the first revision, if the objective, scope, mode of financing, source of fund, vehicle and human resources of the project do not change and no additional item is included and the project cost remains within 10% above or below the original cost, then the Minister/state minister can approve the revised development project proposal (RDPP) taking recommendation from the DPEC. In other words, if the objective, scope, mode of financing, sources of fund, vehicles and human resources are changed or any additional item is included or the cost of the project goes beyond 10% of the original cost then revision is required to be approved by the original approving authority.

In case of 1st revision for situations other than the above and for 2nd revision where the total cost does not exceed 20% of the project cost, the line ministry shall prepare the RDPP and submit it to the concerned wing/sector division of the planning commission. The respective Wing/Sector-Division shall submit the RDPP within the stipulated time for the approval of the Minister/Advisor/State Minister. In some cases recommendations from the PEC might become solicited.

For situation other than the above, planning commission will place the proposal before the ECNEC for consideration and approval.

The project under study, being a partly GoB funded and partly Development Partner (DP) Assisted project, has been approved following the procedures mentioned in the above paragraph as per requirement from the GOB side. The project has already been revised once. And it is under process of revision for the second time. In the original project, the total project cost was BDT 2077.20 m and the revised cost was BDT 3262.06 m. So the cost increase was 57%. The project duration for the original project was Nov. 2008 to Oct. 2010 and the revised duration was Nov. 2008 to Jun. 2012. So the time extension needed was almost 100%. So in the very first revision neither the line ministry nor the planning commission was competent for the approval and it had to be placed to the original approving authority that is the ECNEC. In the same way, the second revision for the DPP has been prepared and placed on the planning commission for further processing. In the 2nd revision the proposed time extension is upto December, 2013 that is about 18 months additional time is sought for. In this case the competent authority for the approval of the RDPP is the ECNEC.

2.4.2 Contract approval procedure:

Clear rules have been provided in the PPR'2008 regarding the approval procedure of the contracts for different goods, works and services. For a large scale project like the one under study the project management activity involves two important aspects – one is the procurement procedure and the other is the contract management procedure. The field level procurement mostly involves procurement of works which is mainly the construction of buildings for the server stations. Both LGED and PWD are responsible for this in which LGED has already completed their part of the construction works that is the construction of all the server stations at Upazilla level. The district, and regional server stations are under construction by PWD. The procurement activities – sourcing of suppliers, calling of tenders, evaluation of the tenders, making agreement for the contract etc. are being conducted by the field offices of PWD. But the approval of the tender proposal is being given by the Secretary of the Election Commission (EC) as per the provision of the DPP. In the DPP, the Secretary of EC has been designated as the contract approving authority for all the major procurement of goods, works and services. But in other GoB projects it is a normal practice that the requiring ministry or department delegates all the procurement of works to PWD where the Procuring Entity (PE) and the Head of the Procurement Entity are respectively the concerned PE and Chief Engineer of PWD. This provision is made in rule 12 of PPR. In that case the contract approval authority is vested on the normal approving stream of PWD and is followed as per Delegation of Financial Power (DOFP) (GOB PPR'2008, rule 12).

2.5 Review of the DPP and ProDoc:

The Development Project Proposal (DPP) which is the document for defining any project and its subsequent approval and implementation guidelines is used for any GoB development project. The DPP consists of a project summary and a project details with necessary annexures and attachments and appendices. The summary consists of 13 points describing the key features of the project including Project Title, Sponsoring Ministry, Executing Agency, Objective, Location of the Project, Estimated Cost, Mode of Financing, Project Implementation period, Cost summary, Log frame, etc. The Project Details describe the Background, Objectives, Priority, Rationale/Linkage, Targets/Outputs/Outcomes, Project Outcomes, Project Components, Sustainability and Governance Issues in details (GOB, Bangladesh Election Commission, DPP updated Jun 2010).

The Project Document (ProDoc) prepared by the UNDP authority is similar to the DPP in terms of project definition. The ProDoc for the CSSED project consists of four sections. In section 1, situation analysis is performed which shows the background context, project outputs are described, the procuring organizations are determined. In section 2 Annual Work Plan (AOP) and Budget Sheet are prepared, in section 3 Management Arrangements are shown defining the Project Board, Project Assurance and the Project Management set-up. This section also describes the Capacity Assessment of Implementing Partners, sustainability issues, and description of Inputs to be provided by the Responsible Parties. It also shows the construction, monitoring and audit arrangements where compliance with building construction code and greener construction requirements eg. Building Research Establishment Environmental Assessment Method (BREEAM) are addressed. In section 4 Monitoring and Evaluation of the project are defined (UNDP 2010).

The DPP approval procedure described above shows that there is a long channel of government authority that requires consultation in approving and revision of DPP. Moreover there is restriction on the no. of revision which is only possible twice with exceptional case three times is permitted. But in case of ProDoc UNDP is able to easily update its project document through amendments and to reallocate funding on a revision of its work plans signed by both parties (UNDP 2009), in its 'Bangladesh Electoral Reform Program Evaluation Report' states that there is more flexibility in the UNDP project document as it is able to reallocate funds by line items through an amendment to the work plan.

2.6 Review of the bid document:

The bid document or the tender document has been prepared following the Standard Tender Document (STD) prepared by the Central Procurement Technical Unit (CPTU). This document has been vetted by UNDP before tender is called. Due to some special requirements of the UNDP some of the provisions have been changed in the document. One important change is that an upper limit and a lower limit have been set for the price of the tender. The Instruction to Tenderers (ITT) clause 32.2 and 33.3 states that if a tenderer offers price significantly higher or lower than the official estimate, then that tender will be rejected. Both upper and lower limit are 15% of the official estimated cost of the works. But as per PPR no limit has been imposed regarding this. Rule 33(2) provides that if the price of

the lowest evaluated tender exceeds the official estimate then all tenders will be rejected. Rule 98(23) stipulates that “if a tenderer offers a price significantly below the official estimate then TEC shall investigate the real reason behind such a low price and consider the Tender nonresponsive if –

(a) it becomes very clear that this Tenderer is inexperienced and cannot price a Tender properly;

(b) the Tenderer cannot provide any justifiable reasons in support of his low price” (GOB PPR’2008:rule 12).

But the sub-rule 24 of rule 98 provides that “If the Tenderer quotes a low price because it happens to enjoy some favorable conditions with respect to this Tender, then the Tender shall be considered as responsive and evaluated accordingly.” This provision allows the Tenderer offering even lower price than 15% of the official estimates provided that he can establish sufficient reason in favor of his price (GOB PPR’2008:rule 98).

Past history shows that there are numerous instances where due to the fierce competition in the construction sector many tenderers have got their work quoting as low as 25% of the official estimate. But in most of the cases the Tenderers could not complete the job in due time and/or their quality of construction has been seriously below standard. So the special provision that has been made in the tender for this server station project is expected to cause good quality assurance mechanism – which will be examined in this study. This issue will be taken into consideration while assessing the quality indicator of our evaluation of efficiency and effectiveness of the project implementation.

2.7 Review of the contract administration and contract management procedures:

The contract management is a broad area in project management as well as in the procurement of works. The project authority must exercise their highest level of professionalism while implementing projects. In rule 38 of PPR, some basic guidelines have been mentioned regarding contract administration and management. It defines that “contract administration and management shall include all administrative, financial, managerial and technical tasks to be performed by the Procuring Entity from contract award until it is successfully concluded or terminated and payment is made and dispute or claims under it is resolved” (PPR’2008: rule38).

The UNDP procurement manual describes that “Once a contract has been awarded and signed, contract management is the process, which ensures that all parties to the legally binding agreement fully meet their respective obligations as efficiently and effectively as possible. The contract management process allows a Business Unit (Procuring Entity) to track and manage the clauses, terms, conditions, commitments and milestones throughout the life of its contracts to maximize business benefits and minimize associated risks. Contract management includes monitoring performance (i.e., quality standards, delivery), effecting acceptance and payment, initiating amendments and orderly resolution of any disputes that may arise in the overall process. Further, contract management ensures that all residual obligations, such as warranties, guarantees and after sales services and support are clearly defined in terms of responsibility, liability, procedures and timeframes.

While the construction of all the district, and regional server stations are being implemented by PWD, the project office for the Election Commission Secretariat is coordinating all the activities of the project. The NPD being the pivotal person, oversees the whole project and coordinates among PWD, Engineering Management Consultant (EMC) and other participating agencies.

2.8 Chapter summary:

A formal organizational structure must be in place for large construction project like the project under study. The Office of the Government Commerce (OGC) has provided clear structures with roles and responsibilities. At the top of the structure lies the investment decision maker who takes the investment decision for use of resources. Then comes the owner or Senior Responsible Owner (SRO) who should have sufficient authority on the resource control. The day-to-day management of the project is done by the project sponsor who acts as an interface between ownership and delivery. Another authoritative guidance on the project management structure is found in PRINCE-2 where there are four levels out of which three levels constitute the project management team and the rest one sits outside it. At top of the level is the corporate or program management who are responsible for commissioning of the project. The next level is the project board – comprising of executives, senior user(s) and senior supplier(s) who are responsible for directing the project. Next in the hierarchy lies the project manager who is responsible for managing the project. The lowest level constitutes the team manager who are actually delivering the project. A very similar level of project organization can be found in the CSSED project. The chief election commissioners and other election commissioners are positioned at the top level of

management analogous to the corporate or program management of PRINCE-2 structure. Among the project board, the Secretary, Election Commission is the executive for our project. the senior officials of the Election Commission who will be representing the senior users for this project. Country Director of UNDP, chief engineers of LGED and PWD are considered senior suppliers in this case since they are providing specialist technical inputs to this project. Being a UN organization, UNDP follows the broad guidelines provided in the UN procurement manual which in turn follows UN General Principles specified in the UN Financial Regulations and Procedures (FRR). The fundamental principles of this regulation are (a) Best value for money;(b) Fairness, integrity and transparency;(c) Effective international competition;(d) The interest of the United Nations. PPA and PPR of the government are also based on the above principles. The approval of development project of the government follows a long channel of authority starting from the executing agency, line ministry, planning commission and finally ECNEC for projects exceeding BDT 500 million. One important issue on the procurement procedure is the contract approving authority. In this project the secretary of EC has been designated as the contract approving authority. But rule 12 of PPR provides that the approval of tender should follow the normal channel of authority in PWD since the Head of Procuring Entity (HOPE) and Procuring Entity (PE) are from PWD. Another important provision of the tender document of the works procurement is that if a tenderer offers price more than 15% below the official estimate, then his tender may be considered non-responsive. . But as per PPR there no limit has been imposed regarding this.

In the next chapter, data and information found from the questionnaire survey, interview with key informants and available documents will be analyzed both qualitatively and quantitatively to evaluate the efficiency and effectiveness of our project.

CHAPTER 3

3.0 DATA ANALYSIS AND FINDINGS

As set forth in the research objective, the main purpose of the study is to determine the procurement and contract management procedure of the project and subsequent evaluation of its efficiency and effectiveness. Available documents from the project were collected and were explored in details. Finding these procedures the next objective was to assess the impacts of these procedures on the efficiency and effectiveness of the project implementation. The characteristic features of the procurement and contract management procedure were used in the survey questionnaire to elicit information from the actual implementers of the project. The Likert Scale model has been used and a rating scale of 1 to 5 has been chosen which could easily be used in the quantitative statistical analysis like calculation of mean, median, mode and subsequent hypothesis testing viz. the student t-test. The frequency distributions of the responses are tabulated in order to find the mean, median, mode and standard deviation. The relevant tables are shown in the appendix-B.

Apart from the quantitative analysis from the questionnaire, more qualitative and fact finding survey was conducted on the key informants of the project to have an in-depth understanding of the project. Focal point from PWD (Superintending Engineer, Project Circle-1), National Project Director, and Deputy Project Director (PWD) of the project were interviewed as the key informants of the survey.

3.1 Information about respondents of questionnaire survey:

Sample size : 25

Designation : Executive Engineer, PWD

Work experience : Between 10 to 25 years

Postings: All are posted in the districts

3.2 Information about the key informants:

Table 3.1 Key Informants Information:

No.	Designation	Posting	Work experience (years)
1.	Natinal Project Director	CSSD project	20
2.	Superintending Engineer	PWD project circle-1	26

No.	Designation	Posting	Work experience (years)
3.	Executive Engineer	PWD project division-2	26
4.	Executive Engineer	PWD (reserve)	17
5.	Executive Engineer	CSSD project	9

3.3 Analysis of the questionnaire survey:

The efficiency and effectiveness of the project implementation are assessed by analyzing the different project parameters that have been set forth in the survey questionnaire. These parameters are time, quality and cost of project implementation. Most of the responses of the questions were perception based mainly reflecting the experience of the respondents. A total of 25 respondents were approached most of whom were the Executive Engineers of Public Works Department (PWD) who were actually implementing the construction of regional, and district server stations. The responses of the questionnaire survey are then analyzed in the subsections that follow:

3.3.1 Procurement and contract management procedures:

Since the project is partly donor funded some of the provisions of PPR has been overruled by some special provision as per the loan financing agreement between GoB and the DPAs. Section 3(2)(d) of the PPA has provided this exemption. As a result there has been found some differences in the implementation procedures.

In question no. 1 of the survey the key informants were asked about the characteristics of the DPP and the ProDoc and were asked if there was any difference between the two. Most of them opined that though there is no significant difference between two, the DPP is much more complicated in terms of its approval procedure. The approval and revision of DPP requires a wide range of government authority layers and broad government consultation. On the other hand UNDP was able to easily update its project document through amendments and to reallocate funding on a revision of its work plans signed by both parties. The long approval and revision procedure of DPP also adversely affect the timely completion of the project. The project under study is also not an exception to this.

Since there is provision of using donor imposed procedures in implementing donor funded project as per the loan agreement, UNDP imposed procurement policy that has impacted the project quality, cost and time. Having consulted with the available documents it

if found that this project uses Engineering Management Consultant (EMC) as the vetting authority for all sorts of procurement proceedings and contract management procedures. There is also a supervision consultant that will supervise the implementation of the regional server stations. These issues were addressed in question no. 2 of the questionnaire. Mainly the key informants responded on this issue. According to them the quality of the project has been somewhat enhanced due to these provisions. Though cost has increased due to the above provisions, the resultant quality increase outweighed the cost incurred.

Another significant characteristic of this project is that in the DPP the secretary of the Election Commission has been designated as the sole contract approving authority in case of most of the procurement of goods, works and services. . But in other GoB projects it is a normal practice that the requiring ministry or department delegates all the procurement of works to PWD where the Procuring Entity (PE) and the Head of the Procurement Entity are respectively the concerned PE and Chief Engineer of PWD. This provision is given in rule 12 of PPR. In that case the contract approving authority is vested on the normal approval stream of PWD and is followed as per Delegation of Financial Power (DOFP). These issues have also been assessed in terms of its impact on the time of contract approval procedure and subsequent project implementation time.

3.3.2 The efficiency and effectiveness of the project:

Project efficiency can be measured by assessing the performance of the project on some key measurable parameters. These parameters are – the time of project implementation, the overall quality of the project implementation including the quality of construction, and the ability to keep the project cost within budget or saving cost. These efficiency parameters which are often termed as the ‘iron triangle’ of the project are measured in this study. The result of the questionnaire survey, interview with the key informants and documentary evidence are discussed below.

3.3.3 The project implementation time:

In determining the impact of the special provisions on the implementation time of the project, the survey question (question #3 in APPENDIX-A) asked whether the designation of the secretary as the contract approving authority has caused any delay in the contract approval procedure.

Majority of the respondents of this questions were of the position of ‘negative impact’ with some of them were in the opinion that the provision had ‘significant negative impact’ on the contract awarding procedure. Few of the respondents opined in the positive (only 5%).

The significance of the question is that it strongly indicates the impact of the contract approval authority on the project implementation time. The key informants in the project office also agreed with this and they also believe that the contract approval procedure has been delayed due to this additional layer of approving authority.

Another implication of the above provision is that if secretary is the original contract approving authority then the next higher authority ie, the commissioners of the EC will have to approve the contract for any variation of works more than 15% of the original contract value. This issue has been addressed in question #4 which asks whether the above requirement (approval of variation over 15% by the commissioners of EC) will cause delay in the approval procedure and subsequent project implementation. The response of this question has been similar to question #3. Most of the respondents opined that the contract approval procedure will be further complicated if the variation amount goes higher than the 15% ceiling. As a result the project completion time will be further delayed.

One important characteristics of most donor funded project is that they monitor project implementation on their own or employ a management consultant on their behalf to oversee the implementation of the project. In this project, Engineering Management Consultant (EMC) has been employed to look after the whole procurement and contract management. UNDP requires that EMC will review/recommend the report of Tender Evaluation Committee (TEC). Question #5.1 (see appendix-A for details) was asked about the implication of this provision on the tender approval process. 16% of the respondents opined that EMC recommendation 'significantly delays' the approval procedure, while the majority (64%) believe that this requirement 'delays' the approval procedure and the rest 20% think that it does not impact on the time of approval. Obviously, none responded that it rather expedites the contract approval procedure (disagree or strongly disagree).

The above results for question #3,4 and 5.1 were analyzed by statistical tools. A one tailed student t - test has been performed. The relevant results are shown in the following table:

Table 3.2 : Distribution of responses for questions concerning implementation time:

variables	Frequency Distribution no./percentage					Total Frequency No./(%)
	Strongly agree No. (%)	Agree No. (%)	No impact No. (%)	Disagree No. (%)	Strongly Disagree No. (%)	
Rating/score=	5	4	3	2	1	
Approval authority	7 (28%)	14 (56%)	4 (16%)	0 (0%)	0 (0%)	25 (100%)
Variation approval	6 (24%)	15 (60%)	4 (16%)	0 (0%)	0 (0%)	25 (100%)
EMC review	4(16%)	16 (64%)	5 (20%)	0(0%)	0(0%)	25 (100%)

Table 3.3: Mean and Standard deviation for the above questions:

variables	Mean	Std. dev.
Approval authority	4.12	0.66
Variation approval	4.08	0.64
EMC review	3.625	0.729
Average of the above three =	3.94	0.676

To test the hypothesis, the student t-distribution has been used. The t-distribution is used when the size of the sample is less than 30, and the population standard deviation is unknown. Furthermore, in using t distribution, it is assumed that the population is normal or approximately normal. (Levin and Rubin, 2000, p. 371).

Since the population mean and standard deviation are not known in this case, they must be estimated. In this hypothesis a value of mean denoted by μ_{Ho} shall be assumed. This value is arbitrarily chosen as 4.00. The rationale is that in the rating scale a value of 1 to 5 is chosen where the midpoint is 3. So, any reasonable value higher than 3.00 will indicate a positive outcome for that indicator. In the survey questionnaire, the above questions are all

used to get a measure of the project completion time. Any higher value than the middle score, 3.00 will lead to our acceptance of the fact that the project will be delayed.

Our population size is about 70 considering 54 district server stations, 9 regional server stations (divisional districts and other larger old districts), and additional coordinating units involved in the implementation of the PWD part. Since we have taken 25 respondents as our sample it is about 36% of the population.

Now, we hypothesize our problem as follows:

Hypothesis - 1

Null hypothesis H_0 : $\mu = 4.00$; the true population score is 4.00 indicating that the project completion time will be delayed due to the special provisions of this project

Alternate hypothesis H_1 : $\mu < 4.00$; the mean score is less than 4.0; indicating that there will be no delay.

These hypotheses are tested using the survey results for question no. 3, 4 and 5.1 separately. First question no. 3 is used and the relevant data and workings are given below:

$\mu_{H_0} = 4.0 \leftarrow$ Hypothesized value of the population mean

$n = 25 \leftarrow$ Sample size

$\bar{x} = 4.12 \leftarrow$ Sample mean

$s = 0.66 \leftarrow$ Sample std. dev.

$df = 24 \leftarrow$ degree of freedom

$\alpha = 0.05 \leftarrow$ Level of significance for testing this hypothesis

Because the population standard deviation is not known we must estimate it using the sample standard deviation as below:

$\sigma = s$

$\hat{\sigma}_{\bar{x}} = \frac{s}{\sqrt{n}} \times \sqrt{\frac{N-n}{N-1}}$ here the term $\sqrt{\frac{N-n}{N-1}}$ is called the finite population multiplier since the sample size is more than 5 percent of

So, $\hat{\sigma}_{\bar{x}} = \frac{0.66}{\sqrt{25}} \times \sqrt{\frac{70-25}{70-1}} = 0.132 \times 0.8 = 0.1066$

Now, we standardize the sample mean, $\bar{x}$, by subtracting μ_{H_0} , the hypothesized mean, and dividing by $\hat{\sigma}_{\bar{x}}$, the estimated standard error of the mean. Because our test of hypothesis is based on the t distribution, we use t to denote the standardized statistic.

$$t = \frac{\bar{X} - \mu_{H_0}}{\hat{\sigma}_{\bar{X}}} = \frac{4.12 - 4.00}{0.1066} = 1.126$$

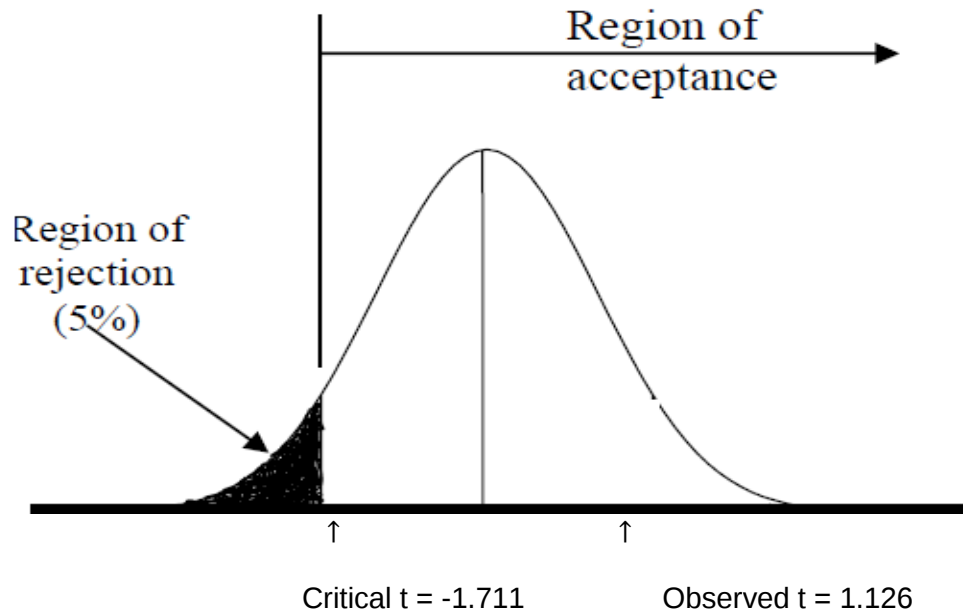


Figure 3.1 : One-tailed hypothesis test at the 0.05 level of significance, showing the acceptance region and the standardized sample mean for project implementation time

From the sketch above it is revealed that the sample mean falls well within the acceptable region. So, we can accept the null hypothesis, “The project completion time will be delayed due to the special provisions of this project”.

By working with the data of the other two variables (questions # 4 and #5.1) similar results has been found and all the three tests are tabulated below.

Table 3.4: Decision of the hypothesis on time

Variables	Sample Mean	Sample std. dev.	Critical t at Sig. level, $\alpha=.05$	t	Decision
Approval authority	4.12	0.66	-1.711	1.126	Accepted
Variation approval	4.08	0.64	-1.711	0.77	Accepted
EMC review	3.625	0.729	-1.711	-0.405	Accepted

So, the null hypothesis formulated at the beginning of this section, ‘the project completion time will be delayed due to the special provisions of this project’ is accepted. This indicates that the provision of some special contract approval process has caused some delay in the tendering procedure which negatively impact on the project completion time.

The actual progress of the project is a good indicator of the validity of the respondent’s opinion on the other questions regarding implementation time of the project. The answer showed compatibility of the responses on this question with other questions regarding project implementation time. None of the respondents said that they were ‘ahead’ or ‘significantly ahead’ of the planned schedule. 32% were keeping up with the plan, while 48% were lagging behind the planned schedule and 20% were ‘significantly lagging behind’ the planned schedule. This result indicates the overall delay of the project.

When asked about the causes of delay other than the ones mentioned in the previous questions, most of the respondents showed one or more than one causes of delay of the project. The most common cause (84%) is the delay in the tender approval process while some of the respondents also complained about the delay in the finalization of architectural/structural drawings (48%) and the delay in the preconstruction activities (20%).

In addition to the above, the respondents were asked to mention other causes of delay. Many of the respondents opined that delay in the technical sanction (approval of Official Estimate), poor financial condition of the contractor, slow payment, rainy season etc. are also causing delay in the implementation of the construction works.

Regarding disbursement of fund, majority of the respondents replied that fund for this project is disbursed more efficiently than other GOB projects while some found no difference from GOB projects.

3.3.4 The project implementation quality:

The project implementation quality is affected by the special provision of the procurement and contract management procedures of the project. These special provisions are the UNDP requirement of reviewing the TEC report, engineering design and other quality assurance plan by the EMC. Also a supervision consultant is employed to ensure quality of construction. Another provision is that if any tenderer offers a price more than 15% below the official estimate, then his tender will be rejected. All these issues have been raised in the survey and the results are analyzed.

When asked whether the EMC review of the TEC report will add value to the tendering proceedings, 12% of the respondents were very much satisfied with the performance of EMC and strongly agreed with the above statement; 56% agreed with the statement and the rest 32% took a neutral stand by responding that there actually will not be any extra value addition with EMC involvement.

Regarding the impact of EMC review of the engineering design and construction quality assurance plan on the quality of construction, 16% of the respondents strongly agreed that this provision will enhance quality of construction, 60% only agreed and 24% were neutral indicating that there is no impact on the quality. There was no disagreement on the statement.

An investigation on the tender document revealed that the tender evaluation criteria (clause 33.2 in the ITT) stipulates that if a tenderer offers price more than 15% below the official estimate, then his tender may be considered non-responsive. The respondents were asked if this will ensure quality of construction. A significant majority of the respondents believe that this provision will ensure quality of construction. 28% believes that it will 'significantly ensure quality of construction', 52% believe that it will 'ensure quality of construction', 20% were in the middle position ie, 'no impact' on the quality of construction. There was none in the disagreement side of the statement.

The employment of supervision consultant for the regional server stations is another factor that impacts quality of construction. Question no. 8.1 addressed this issue. 24% strongly agreed and 56% agreed and the rest 20% were neutral on the above statement.

All the above issues regarding their impact on quality of the project implementation are then analysis to test their acceptance. The results are tabulated below:

Table B3: Distribution of responses for questions concerning project implementation quality

Table 3.5: Distribution of responses for questions concerning implementation quality

Variables	Frequency Distribution no./percentage					Total Frequency No/percentage
	Strongly agree No. (%)	Agree No. (%)	No impact No. (%)	Disagree No. (%)	Strongly Disagree No. (%)	
Rating/score=	5	4	3	2	1	
EMC review of tender	3 (12%)	14 (56%)	8 (32%)	0 (0%)	0 (0%)	25 (100%)
EMC review of design	4 (24%)	15 (60%)	6 (24%)	0 (0%)	0 (0%)	25 (100%)
Tender price less than 15% below estimate	7 (28%)	13 (52%)	5 (20%)	0 (0%)	0 (0%)	25 (100%)
Supervision consultant	6 (24%)	14 (56%)	5 (20%)	0 (0%)	0 (0%)	25 (100%)
Avg. of the above =	5	14	6	0	0	

Table 3.6: Mean and Standard deviation for the above questions:

Variables	Mean	Std. dev.
EMC review of tender	3.8	0.645
EMC review of design	3.92	0.64
Tender price less than 15% below estimate	4.08	0.702
Supervision consultant	4.04	0.676
Avg. of the above =	3.96	0.665

Hypothesis – 2

Null hypothesis H_0 : $\mu = 4.00$; the true population score is 4.00, indicating that the project quality will be enhanced due to the special provisions of this project

Alternate hypothesis H_1 : $\mu < 4.00$; the mean score is less than 4.0, indicating that there will be no enhancement of quality.

Unlike the previous test of hypothesis for 'time', the test of hypothesis for 'quality' will be performed by taking the average mean and std. deviations of all the four variables tabulated above.

Relevant data and workings are given below:

$\mu_{H_0} = 4.0 \leftarrow$ Hypothesized value of the population mean

$n = 25 \leftarrow$ Sample size

$\bar{x} = 3.96 \leftarrow$ Sample mean

$s = 0.665 \leftarrow$ Sample std. dev.

$df = 24 \leftarrow$ degree of freedom

$\alpha = 0.05 \leftarrow$ Level of significance for testing this hypothesis

So, $\hat{\sigma}_{\bar{x}} = \frac{0.665}{\sqrt{25}} \times \sqrt{\frac{70-25}{70-1}} = 0.132 \times 0.8075 = 0.1074$

$$t = \frac{\bar{x} - \mu_{H_0}}{\hat{\sigma}_{\bar{x}}} = \frac{3.96 - 4.00}{0.1074} = -0.372$$

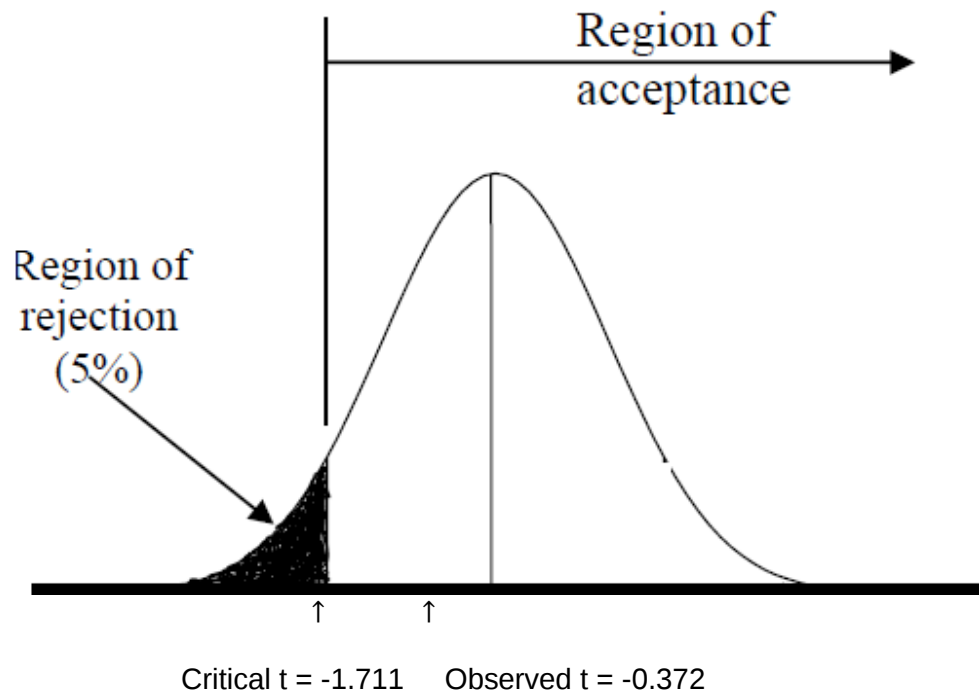


Figure 3.2 : One-tailed hypothesis test at the 0.05 level of significance, showing the acceptance region and the standardized sample mean for project implementation quality

Table 3.7: Decision of the hypothesis on quality:

Variables	Sample Mean	Sample std. dev.	Critical t at Sig. level, $\alpha=.05$	t	Decision
Average of the above variables	3.96	0.665	-1.711	-0.372	Null hyp. Accepted

The above sketch shows that the observed value of “ t ” is greater than the point of rejection at the given 5% level of significance. So we accept the null hypothesis which means that according to the perceptions of the respondents the special provisions of some check and balance by the EMC and supervision consultants and some contractual terms the quality of the project will be enhanced.

3.3.5 The project implementation cost:

A general characteristic of all projects is that whenever measures are taken to improve quality, it will also associate some incurring of costs. The same applies here. But the evaluation should be made to ascertain whether the quality outweighs cost which is

desirable from any project. In this two special provisions are considered in determining the impact on cost.

The tender evaluation criteria stipulates that if a tenderer offers price more than 15% below the official estimate, then his tender will be rejected. Question #7.2 addressed this issue asking whether the above provision would preclude the possibility of the tenderer's offering lower prices and thus deprive the procuring entity any gain in economy. 12% 'strongly agreed', 64% 'agreed', 20% were neutral and the rest 4% 'disagreed' with the above statement.

Another issue regarding cost implication is the employment of supervision consultant for ensuring quality of construction of the regional server stations. Question no 8.2 addressed this issue. It asked whether the employment of supervision consultants will incur cost which will outweigh any gain in quality. 4% 'strongly agreed', 56% 'agreed', 28% were neutral and the rest 12% 'disagreed' with the above statement.

The result of the above two question regarding quality issues are tabulated below:

Table 3.8: Distribution of responses for questions concerning project cost

Question No.	Frequency Distribution no./percentage					Total Frequency No/percentage
	Strongly agree No. (%)	Agree No. (%)	No impact No. (%)	Disagree No. (%)	Strongly Disagree No. (%)	
Rating/score=	5	4	3	2	1	
Tender price less than 15% below estimate	3 (12%)	16 (64%)	5 (20%)	1 (4%)	0 (0%)	25 (100%)
Supervision consultant	1 (4%)	14 (56%)	7 (28%)	3 (12%)	0 (0%)	25 (100%)
Avg. of the above =	2	15	6	2	0	25

Table 3.9: Mean and Standard deviation for the above questions:

variables	Mean	Std. dev.
Tender price less than 15% below estimate	3.84	0.688
Supervision consultant	3.52	0.77

variables	Mean	Std. dev.
Avg. of the above =	3.68	0.73

Now, regarding the project implementation cost the following hypotheses are formulated:

Hypothesis - 3

Null hypothesis H_0 : $\mu = 4.00$; the true population score is 4.00 indicating that the project cost will be increased due to the special provisions of this project

Alternate hypothesis H_1 : $\mu < 4.00$; the mean score is less than 4.0; indicating that there will be no increase in cost.

Again as in the test of hypothesis for 'quality', the test of hypothesis for 'cost' will be performed on the basis of average of the above two variables.

Relevant data and workings are given below:

$\mu_{H_0} = 4.0 \leftarrow$ Hypothesized value of the population mean

$n = 25 \leftarrow$ Sample size

$\bar{x} = 3.68 \leftarrow$ Sample mean

$s = 0.73 \leftarrow$ Sample std. dev.

$df = 24 \leftarrow$ degree of freedom

$\alpha = 0.05 \leftarrow$ Level of significance for testing this hypothesis

So, $\hat{\sigma}_{\bar{x}} = \frac{0.73}{\sqrt{25}} \times \sqrt{\frac{70-25}{70-1}} = 0.146 \times 0.8075 = 0.118$

$t = \frac{\bar{x} - \mu_{H_0}}{\hat{\sigma}_{\bar{x}}} = \frac{3.68 - 4.00}{0.118} = -2.712$

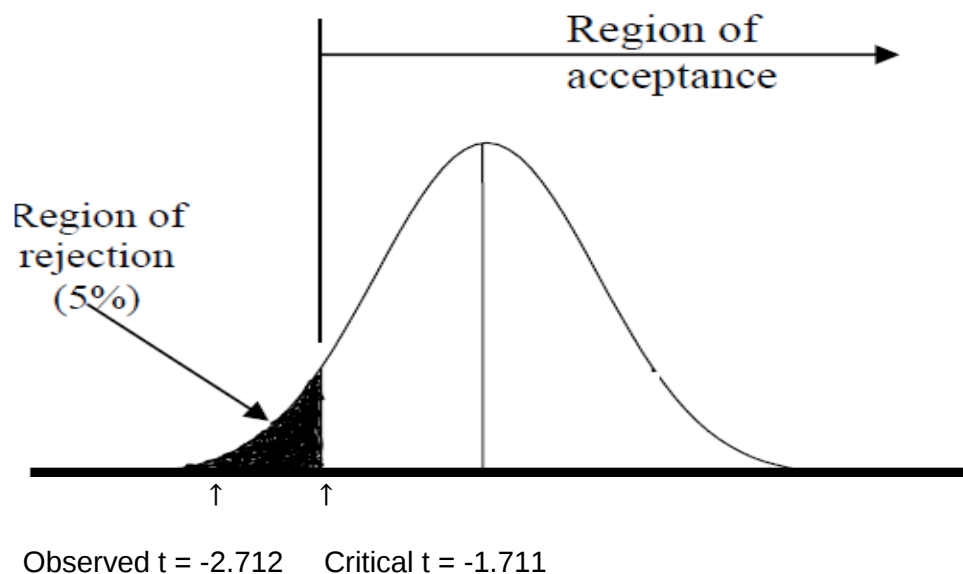


Figure 3.3 : One-tailed hypothesis test at the 0.05 level of significance, showing the acceptance region and the standardized sample mean for project implementation cost

In the test of hypothesis for cost the average of the two questions on the cost issues is taken.

Table 3.10 Decision of the hypothesis on cost:

Question No.	Sample Mean	Sample std. dev.	Critical t at Sig. level, $\alpha=.05$	t	Decision
Avg. of question 7.2 and 8.2	3.68	0.73	-1.711	-2.712	Null hyp. rejected

So the survey result and the relevant analysis show that the cost of the project is not significantly increased due to the above special provisions.

Now that the key performance indicators of the project namely the time, quality and cost are evaluated from the survey conducted on the field officers of PWD, an evaluation of the project efficiency can be made. Since it is very difficult to have all the parameters in control, the project decision makers often have to make trade-offs between the three objectives. The investment decision maker and senior responsible officers will have to set the priority of the project. The objective of the project is to house the election staffs, photo voter list, computers, accessories and all other equipments to keep the electoral database

up to date. The overarching objective is to conduct a free and fair election in the next election. Since the project has already been delayed up to December 2013, it is very unlikely that the project will contribute to the next national election to be held within December 2013. In that respect time should have been the most important priority of this project.

3.4 Analysis of the Key Informant Interviews:

The key informants of the survey were selected persons that have sufficient knowledge about the whole project. The National project directors, two present and former Deputy Project Director from the PWD part, the focal point of PWD, and Deputy Chief of the Election Commission were interviewed to have some in-depth knowledge about the project. Also their opinions about the questions set forth in the survey questionnaire were sought.

One important issue on the procurement procedure is the contract approving authority. In this project the secretary of EC has been designated as the contract approving authority. Most of the key informants think that there has been a flaw in the preparation of DPP. The contract approval authority should have been vested on the normal approval stream of the PWD which is the Procuring Entity in this project. This provision is also made in rule 12 of PPR. Had this been done the delay in the tendering procedure would have been avoided.

They also told that there was no need to review the TEC report by the EMC since representative of the EMC are present in the TEC meeting. Should there have been any irregularities in the tender evaluation the representative of EMC could easily take corrective measures or report it to the EMC and project director for corrective measures. This would save extra time required to review all the TEC reports by the EMC head office.

Some of the key informants opined that EMC involvement will enhance quality of construction since they worked as additional quality control authority which ensured neutral assessment on the construction quality.

Regarding the involvement of supervision consultant in the regional server stations the key informants informed the researcher that the objective behind the employment of supervision consultant was to give the PWD official some relief from the burden of day-to-day supervision and monitoring of the construction since they are overstressed with their other project assignment. So, the supervision consultants may take the responsibility of ensuring quality of construction, testing of materials and other legal and environmental compliance. In this sense supervision consultants are contributing to the quality assurance issue.

The provision of 15% lower limit on the quotation of price by the tenderer all the key informants agreed that this would prevent tenderers from involving themselves in fierce competition which would cause them to find ways of cutting corners. So quality is somewhat ensured with this provision.

Regarding efficiency of disbursement of fund the key informants told that since the donor fund is available well ahead of the time of actual expenditure time, there is no problem of fund in this project. Even the donor allows advance disbursement of fund.

3.5 Summary of key findings:

The study was intended to find the procurement and contract management procedures of the project and how those procedures impact on the efficiency and effectiveness of the project. The relevant documents like the DPP and Pro Doc have been studied and other operational details of the project implementation have been investigated. The DPP approval and revision procedures show that it involves a wide range of government authority layers and broad government consultation. On the other hand UNDP was able to easily update its Pro Doc through amendments and to reallocate funding on a revision of its work plans. The long approval and revision procedure of DPP also adversely affected the timely completion of the project. The designation of the secretary as the contract approving authority also has impacted adversely on the timely execution of the project. Many respondents and key informants opined that this goes contrary to the provision of the PPR where it provides that the procurement of work should be delegated to an agency that has sufficient expertise.

The efficiency and effectiveness of the project implementation are assessed by analyzing the different project parameters that have been set forth in the survey questionnaire.

A one tailed t-test has been conducted and the acceptance of whether the three parameters of the project have been achieved was tested. The hypotheses show that there is delay in the project implementation but at the same time quality of the project has been ensured/ enhanced and the cost increase is not significant. But to assess the overall efficiency and effectiveness of the project it must be weighed against the priority of the project. The objective of the project is to build sufficient infrastructures all over the country in order to house all the election staffs, computer servers, other computer accessories and equipment etc. to keep an updated voter list. If the project is not completed in due time the other related projects like the PERP and IDEA will suffer and the next national election which is to be held on December 2013 will not enjoy the benefit of these projects. So in spite of its quality enhancement it will not be effective. So the project seems to be more efficient than

other GoB projects in terms of its quality and cost parameters but due to its delay in implementation, it might not be effective in the end.

CHAPTER 4

4.1 Conclusions:

From the analysis of the preceding chapter it is seen that the “Construction of Server Stations for Electoral Database (CSSED)” project follows procurement and contract management procedure that are different from other GoB procedures which impact on the performance of the project implementation. The efficiency of the project in terms of quality and cost is more than other GoB projects. But in terms of implementation time the project lags behind many other GoB projects. This is due to the introduction of additional layers in the procurement and contract management procedures. So, to assess the overall efficiency and effectiveness of the project the priority of the project should be considered. According to the key informants the priority should have been the completion of the project in due time since provision of sufficient infrastructures is essential for accommodation of all the election staffs, keeping all the records of photo voter list, computer servers and other accessories in District, Thana and Upazila level are of utmost important to hold a free and fair election with all the support from technology. The revised project completion time is December 2013. So the next national elections which will be held at the end of 2013 will not be benefited from the project. So it can be concluded that the project is efficient in terms of quality and cost but due to its delay in completion it will not be effective ultimately.

The delay in the project implementation time has been attributed to the high profile contract approving authority which only added additional layers without adding any value. It also do not support provision of PPR where in rule 12 it is stipulated that the Head of the Procuring Entity (HOPE) and Procuring Entity (PE) of the executing agency should be delegated for the procurement and approval of contract. Other causes of delay are – delay in finalization of architectural and structural drawings, delay in the technical sanction (approval of Official Estimate), poor financial condition of the contractor, slow payment, rainy season etc.

The enhancement of the quality of construction has been possible due the employment of Engineering Management Consultant (EMC) and supervision consultant for the regional server stations and the special provision of rejecting any tender offering more than 15% higher or lower price than the official estimate.

The increase in cost due to the above provisions is not significant and the quality gained outweighs the increase in cost. So the project is efficient both in terms of quality and cost.

4.2 Recommendations:

It has been found in the study that project has been efficient in terms of its assurance or enhancement of quality and keeping cost within tolerance. To keep it up the following recommendations are made:

- Involve the supervision consultants more intensively on the quality control initiatives. While supervision of the construction works they must ensure compliance with building codes and environmental issues.
- PWD must coordinate and cooperate with the EMC and Department of Architecture (DoA) in improving the design and construction plan of the buildings.
- The 15% lower limit for the acceptance of tender shall be further restricted to 10% in order to ensure quality of construction.

The measures will be useful in further improvement of the project under study. But the improvement in implementation time is difficult to achieve at this stage of project implementation. The DPP has already been revised twice it is very unlikely that it will be farther revised. So the provisions that have already been made in the DPP will not be possible to alter. For example, the contract approving authority cannot be delegated to the approval channel of PWD at this stage. But other causes of delay like finalization of architectural and structural drawings, delay in the technical sanction etc. can still be avoided in many of the construction works that are still to be implemented in this project.

The lessons learnt from this project shall be applied in further projects. For example the formulation of DPP for any future project involving civil construction shall be done in consultation with PWD since they have the expertise of project implementation and knowledge of procurement of works.

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APPENDIX-A

Sample Questionnaire

This is a questionnaire intended to perform an academic research for the fulfillment of a dissertation paper which is a requirement for the completion of the Masters in Procurement and Supply Management Course at the Brac University. The questions are framed as a measure to assess the efficiency and effectiveness of the project being implemented by the Election Commission for the “Construction of Server Stations for Electoral Database (CSSED)” project. Your honest response is valuable for the researcher. The researcher assures you that the information you provide will be kept confidential & only be used for academic purpose.

[Question No. 1 and 2 are intended to get response from the key informants of the project like the National Project Director, Deputy Project Director (PWD), Focal Point from PWD etc. You may skip these two questions]

1. UNDP follows Project Document as guidelines for project implementation while GoB follows Development Project Proposal (DPP) for the same reason. How do they differ?

2. The project follows procurement guidelines as stipulated by the UNDP and supersedes /overrides PPR. How does it impact on project implementation?

3. As per rule 12 of PPR'2008, the approval of tender should follow the normal channel of authority in PWD since the Head of Procuring Entity (HOPE) and Procuring Entity (PE) are from PWD. But this project designates Secretary of

Election Commission as the sole contract approving authority. How does it affect contract awarding procedure?

- a) Significantly delays award of contract
- b) Delays award of contract
- c) No impact (doesn't delay/expedite award of contract)
- d) Expedites award of contract
- e) Significantly expedites award of contract

4. If Secretary, Election Commission is the original approving authority then the approval of variation of more than 15% will be given by the next higher authority as per PPR. This will cause problem/delay in the approval process?

- a) Strongly agree
- b) Agree
- c) No impact (doesn't delay/expedite award of contract)
- d) Disagree
- e) Strongly disagree

5. UNDP requires that Engineering Management Consultant (EMC) will review/recommend the report of Tender Evaluation Committee(TEC).

5.1 This causes delay in the approval procedure. Do you agree?

- a) Strongly agree
- b) Agree
- c) No impact (doesn't delay/expedite award of contract)
- d) Disagree
- e) Strongly disagree

5.2 The above provision adds value (enhance quality of tendering process) to the tendering proceedings. Do you agree?

- a) Strongly agree
- b) Agree
- c) No impact
- d) Disagree

e) Strongly disagree

6. EMC reviews the engineering design and construction quality assurance plan prepared by PWD. This will enhance quality of construction of the project?

- a) Strongly agree
- b) Agree
- c) No impact
- d) Disagree
- e) Strongly disagree

7. The tender evaluation criteria (clause 33.2 in the ITT) stipulates that if a tenderer offers price more than 15% below the official estimate, then his tender may be considered non-responsive.

7.1 This will ensure quality of construction. Do you agree with this statement?

- a) Strongly agree
- b) Agree
- c) No impact
- d) Disagree
- e) Strongly disagree

7.2 The above provision will deprive the PE from gaining economy by precluding any possibility of the contractors' offering lower price. Do you agree with this statement?

- a) Strongly agree
- b) Agree
- c) No impact
- d) Disagree
- e) Strongly disagree

8. Supervision consultants are employed for the construction of regional server stations. [Tick, If your project is a regional server station]

8.1 This will ensure quality of construction and better management of the project. Do you agree?

- a) Strongly agree

- b) Agree
- c) No impact
- d) Disagree
- e) Strongly disagree

8.2 The above provision will cause extra cost of the project which will outweigh the gain in quality. Do you agree?

- a) Strongly agree
- b) Agree
- c) No impact
- d) Disagree
- e) Strongly disagree

9. What is the progress of your project?

- a) Significantly ahead of the planned schedule
- b) Ahead of the planned schedule
- c) Keeping up to the plan
- d) Lagging behind the planned schedule
- e) Significantly lagging behind the planned schedule

10. What is(are) the cause(s) of delay for this particular project? [you might tick more than one]

- a) Delay in the tender approval process
- b) Delay in finalization of architectural drawing/structural drawing
- c) Delay in preconstruction activities like soil test, structural design
- d) Delay in the actual construction of the project

11. What other factors, in your opinion, may cause delay in your project?

12. How efficiently the fund is released in this project?

- a) More efficient than other GoB project
- b) No difference
- c) Less efficient than other GoB project

[Thank you for your kind response]

APPENDIX-B

Table B1: Distribution of responses for question no. 3 to 8.2

Question No.	Frequency Distribution no./percentage					Total Frequency No./percentage
	Strongly agree No. (%)	Agree No. (%)	No impact No. (%)	Disagree No. (%)	Strongly Disagree No. (%)	
Rating/score=	5	4	3	2	1	
3.	7 (28%)	14 (56%)	4 (16%)	0 (0%)	0 (0%)	25 (100%)
4.	6 (24%)	15 (60%)	4 (16%)	0 (0%)	0 (0%)	25 (100%)
5.1	4(16%)	16 (64%)	5 (20%)	0(0%)	0(0%)	25 (100%)
5.2	3 (12%)	14 (56%)	8 (32%)	0 (0%)	0 (0%)	25 (100%)
6	4 (24%)	15 (60%)	6 (24%)	0 (0%)	0 (0%)	25 (100%)
7.1	7 (28%)	13 (52%)	5 (20%)	0 (0%)	0 (0%)	25 (100%)
7.2	3 (12%)	16 (64%)	5 (20%)	1 (4%)	0 (0%)	25 (100%)
8.1	6 (24%)	14 (56%)	5 (20%)	0 (0%)	0 (0%)	25 (100%)
8.2	1 (4%)	14 (56%)	7 (28%)	3 (12%)	0 (0%)	25 (100%)

Table B2: Mean, Median and Mode for question no. 3 to 8.2

Question No.	Mean	Median	Mode	Std. dev.
3.	4.12	4	4	0.66
4.	4.08	4	4	0.64
5.1	3.625	4	4	0.729
5.2	3.8	4	4	0.645
6	3.92	4	4	0.64
7.1	4.08	4	4	0.702
7.2	3.84	4	4	0.688
8.1	4.04	4	4	0.676
8.2	3.52	4	4	0.77

APPENDIX-C

PERCENTAGE POINTS OF THE T DISTRIBUTION

Tail Probabilities

One Tail 0.10 0.05 0.025 0.01 0.005 0.001 0.0005

Two Tails 0.20 0.10 0.05 0.02 0.01 0.002 0.001

-----+-----									
D	1	3.078	6.314	12.71	31.82	63.66	318.3	637	1
E	2	1.886	2.920	4.303	6.965	9.925	22.330	31.6	2
G	3	1.638	2.353	3.182	4.541	5.841	10.210	12.92	3
R	4	1.533	2.132	2.776	3.747	4.604	7.173	8.610	4
E	5	1.476	2.015	2.571	3.365	4.032	5.893	6.869	5
E	6	1.440	1.943	2.447	3.143	3.707	5.208	5.959	6
S	7	1.415	1.895	2.365	2.998	3.499	4.785	5.408	7
	8	1.397	1.860	2.306	2.896	3.355	4.501	5.041	8
O	9	1.383	1.833	2.262	2.821	3.250	4.297	4.781	9
F	10	1.372	1.812	2.228	2.764	3.169	4.144	4.587	10
	11	1.363	1.796	2.201	2.718	3.106	4.025	4.437	11
F	12	1.356	1.782	2.179	2.681	3.055	3.930	4.318	12
R	13	1.350	1.771	2.160	2.650	3.012	3.852	4.221	13
E	14	1.345	1.761	2.145	2.624	2.977	3.787	4.140	14
E	15	1.341	1.753	2.131	2.602	2.947	3.733	4.073	15
D	16	1.337	1.746	2.120	2.583	2.921	3.686	4.015	16
O	17	1.333	1.740	2.110	2.567	2.898	3.646	3.965	17
M	18	1.330	1.734	2.101	2.552	2.878	3.610	3.922	18
	19	1.328	1.729	2.093	2.539	2.861	3.579	3.883	19
	20	1.325	1.725	2.086	2.528	2.845	3.552	3.850	20
	21	1.323	1.721	2.080	2.518	2.831	3.527	3.819	21
	22	1.321	1.717	2.074	2.508	2.819	3.505	3.792	22
	23	1.319	1.714	2.069	2.500	2.807	3.485	3.768	23
	24	1.318	1.711	2.064	2.492	2.797	3.467	3.745	24
	25	1.316	1.708	2.060	2.485	2.787	3.450	3.725	25
	26	1.315	1.706	2.056	2.479	2.779	3.435	3.707	26
	27	1.314	1.703	2.052	2.473	2.771	3.421	3.690	27
	28	1.313	1.701	2.048	2.467	2.763	3.408	3.674	28
	29	1.311	1.699	2.045	2.462	2.756	3.396	3.659	29
	30	1.310	1.697	2.042	2.457	2.750	3.385	3.646	30
	32	1.309	1.694	2.037	2.449	2.738	3.365	3.622	32
	34	1.307	1.691	2.032	2.441	2.728	3.348	3.601	34
	36	1.306	1.688	2.028	2.434	2.719	3.333	3.582	36

38		1.304	1.686	2.024	2.429	2.712	3.319	3.566		38
40		1.303	1.684	2.021	2.423	2.704	3.307	3.551		40
42		1.302	1.682	2.018	2.418	2.698	3.296	3.538		42
44		1.301	1.680	2.015	2.414	2.692	3.286	3.526		44
46		1.300	1.679	2.013	2.410	2.687	3.277	3.515		46
48		1.299	1.677	2.011	2.407	2.682	3.269	3.505		48
50		1.299	1.676	2.009	2.403	2.678	3.261	3.496		50
55		1.297	1.673	2.004	2.396	2.668	3.245	3.476		55
60		1.296	1.671	2.000	2.390	2.660	3.232	3.460		60
65		1.295	1.669	1.997	2.385	2.654	3.220	3.447		65
70		1.294	1.667	1.994	2.381	2.648	3.211	3.435		70
80		1.292	1.664	1.990	2.374	2.639	3.195	3.416		80
100		1.290	1.660	1.984	2.364	2.626	3.174	3.390		100
150		1.287	1.655	1.976	2.351	2.609	3.145	3.357		150
200		1.286	1.653	1.972	2.345	2.601	3.131	3.340		200
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Two Tails		0.20	0.10	0.05	0.02	0.01	0.002	0.001		
One Tail		0.10	0.05	0.025	0.01	0.005	0.001	0.0005		
Tail Probabilities										